

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No. : 10/730,525 Confirmation No. 4271  
Applicant : Agapios Agapiou, et al.  
Filed : December 8, 2003  
TC/A.U. : 1755  
Examiner : James W. Pasterczyk  
Docket No. : 2003U049.US  
Customer No. : 25959  
Date : May 30, 2006

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**DECLARATION UNDER 37 CFR § 1.132**

Sir:

I, Agapios K. Agapiou, declare as follows:

I am a co-inventor of the claimed subject matter in the above referenced patent application.

Previous Declarations dated December 9, 2005 and February 15, 2006, contained data intended to show that average particle size (APS) of silica support had a positive effect on catalyst activity and such a showing was unexpected. The data did indeed show these positive effects. In subsequent actions, the Examiner stated that because the data was derived from di-chloride based catalysts, rather than the di-fluoride of the claims, that the data did not place the claims in condition for allowance.

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Reply to Office Action of March 13, 2006

The attached data include four different polymerization runs, all with a difluoride catalyst, using both relatively large (55 $\mu$ ) and relatively small (25 $\mu$ ) support/silica. Note: for polymerization runs 41 and 43, the increase in activity (from 2545 to 3240) between a 55 $\mu$  APS silica and a 25 $\mu$  APS silica of 27%, is clearly unexpected. Also of note for the runs numbered 148 and 149 is the increase in activity from 4470 to 5460, an increase of 22% of the relatively small APS over the activity of the relatively large APS, again unexpected. In fact, as a result of this finding, the catalyst of the invention was developed on the smaller average particle size silica using the di-fluoro-metallocene. In conclusion, the data presented here showing that for di-fluoride catalysts smaller particle size provides an unexpected sharp rise in catalyst efficiency, and the data presented earlier for di-chloride catalysts showing substantially the same thing, supports the present claims of this case.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 or Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or an patent issuing there from.

Respectfully submitted,

May 30, 2006  
Date

Agapios K. Agapiou  
Agapios K. Agapiou

### Effect of Silica Size on Catalyst Activity-Using Di-Fluoro Metallocene

<u>Catalyst Run#</u>	<u>Metallocene</u>	<u>Silica APS</u>	<u>Polym. Run#</u>	<u>Yield(g)</u>	<u>Productivity</u>	<u>mmole</u> <u>MAO g</u> <u>SiO2</u>	<u>mmole</u> <u>MCN g</u> <u>SiO2</u>
127-1	A	55 micron	41	170	2545	6.4*	0.063
127-2	A	25 micron	43	216	3240	6.4*	0.063
148-1	A	55 micron	148	149	4470	6.4 f	0.063
148-2	A	25 micron	149	182	5460	6.4 f	0.063

Productivity = gPE/gCat.h, APS= Average Particle Size

\*Aged MAO  
f = fresh, un-aged MAO

A= bis(1,3-methyl-*n*-butylcyclopentadienyl) zirconium difluoride  
the polymerizations (slurry) were run as in all the polymerizations in the original application, see pages 43-44, paragraph 103

AKA, 05/09/2006

5/31/2006